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DATA REPOSITORY

Table DR1. Analytical results of duplicates and standards for the whole-rock major and trace elements analyses

Table DR2. Analytical results of the certified reference material for the PGE analysis

Figure DR1. **(a)** Diagram showing variations in the $(Nb/Th)_{PM}$ and $(Th/Yb)_{PM}$ ratios; **(b)** Diagram showing variations in the $(Th/Yb)_{PM}$ and $(Nb/Yb)_{PM}$ ratios, which are normalized to the Primitive Mantle values of McDonough and Sun (1995). **(c)** Plots of Ce/Yb vs. Ce; **(d)** Plot of Ce/Yb vs. Sm/Nd; **(e)** Plots of Th/Yb vs. Ta/Yb. Data source: N-MORB composition is from Hoffman (1988). The Upper Continental Crust (UCC) and Lower Continental Crust (UCC) compositions are from Gao et al. (1998).

Figure DR2. **(a)** Plots of Ti vs. Zr (Pearce, 1996), **(b)** Plots of Zr vs. Zr/Y (Pearce and Norry, 1979).

Figure DR3. Plots of Pb vs. Cu (after Vogel and Keays, 1997).

Figure DR4. The probability density plot of zircon U-Pb age..

Table DR1. Analytical results of duplicates and standards for the whole-rock major and trace elements analyses

Certified standards material	SiO_2 (wt.%)	Al_2O_3	Fe_2O_3	FeO	MgO	CaO	Na_2O	K_2O	MnO	P_2O_5	TiO_2	LOI	Total	TFe_2O_3	La (ppm)	Ce	Pr	Nd	Sm	Eu	Gd	Tb
GAu9bGSR1																						
Certified value	72.83	13.40		1.02	0.42	1.55	3.13	5.01	0.06	0.09	0.29	0.70		2.14	54.00	108.00	12.70	47.00	9.70	0.85	9.30	1.65
Measured value 1	72.02	14.34	0.97	1.03	0.40	1.61	3.21	5.22	0.06	0.10	0.25	0.62	99.83	2.12	53.04	107.55	12.30	43.32	9.09	0.83	8.39	1.53
Measured value 2	72.07	14.47	0.95	1.01	0.37	1.58	3.26	5.16	0.06	0.10	0.25	0.56	99.85	2.08	56.19	115.68	13.02	46.58	9.97	0.88	9.15	1.70
Measured value 3	71.86	14.56	0.99	0.97	0.37	1.61	3.28	5.20	0.06	0.10	0.25	0.56	99.82	2.08	56.51	116.20	13.19	46.85	9.88	0.89	9.08	1.69
Measured value 4	71.80	14.52	1.00	0.97	0.37	1.59	3.28	5.18	0.06	0.10	0.25	0.63	99.75	2.08	56.44	115.50	13.33	47.18	10.00	0.90	9.07	1.68
GAu10bGSR2																						
Certified value	60.62	16.17		2.39	1.72	5.20	3.86	1.89	0.08	0.24	0.52	4.44		4.90	21.80	40.00	4.90	19.00	3.40	1.02	2.70	0.41
Measured value 1	61.52	15.81	2.41	2.27	1.65	5.10	3.98	1.78	0.08	0.23	0.50	4.48	99.80	4.94	20.38	40.71	4.84	18.60	3.37	1.06	2.71	0.36
Measured value 2	61.63	15.81	2.45	2.27	1.66	5.11	3.98	1.78	0.08	0.23	0.50	4.27	99.77	4.98	19.33	39.23	4.77	18.34	3.24	1.05	2.68	0.36
Measured value 3	61.57	15.88	2.29	2.44	1.65	5.13	3.98	1.79	0.08	0.23	0.51	4.27	99.82	4.99	20.11	40.47	4.85	18.85	3.44	1.07	2.72	0.37
Measured value 4	61.61	15.84	2.41	2.32	1.65	5.13	3.99	1.79	0.08	0.23	0.50	4.25	99.80	4.99	19.14	39.16	4.71	18.49	3.26	1.06	2.60	0.37
GAu11bGSR14																						
Certified value	66.27	16.33		1.60	1.63	2.66	5.30	2.60	0.06	0.13	0.30	1.28		3.12	25.00	48.00	5.80	21.00	3.30	1.00	2.40	0.29
Measured value 1	65.31	17.41	1.47	1.55	1.55	2.62	5.57	2.67	0.05	0.14	0.28	1.19	99.81	3.20	22.59	48.02	5.82	21.63	3.50	0.97	2.60	0.35
Measured value 2	65.15	17.39	1.48	1.58	1.56	2.62	5.58	2.67	0.06	0.14	0.28	1.29	99.79	3.24	22.81	49.08	5.99	21.86	3.50	1.00	2.67	0.35
Measured value 3	65.12	17.43	1.50	1.55	1.55	2.62	5.57	2.67	0.05	0.14	0.28	1.35	99.84	3.23	24.31	50.34	6.03	22.30	3.45	1.00	2.74	0.35
Measured value 4	65.20	17.42	1.51	1.55	1.55	2.62	5.57	2.67	0.06	0.14	0.28	1.21	99.78	3.24	23.37	49.24	5.97	21.96	3.51	0.99	2.64	0.34
GAu12aGSR15																						
Certified value	49.62	13.76		10.80	7.20	9.60	2.07	0.48	0.21	0.08	0.92	1.06		14.80	2.90	7.70	1.25	6.50	2.10	0.91	2.80	0.57
Measured value 1	51.63	11.85	3.57	10.83	7.69	9.31	2.33	0.48	0.19	0.09	0.89	0.98	99.83	15.60	3.26	8.21	1.32	6.73	2.17	0.87	2.79	0.57
Measured value 2	51.43	11.84	3.92	10.57	7.63	9.31	2.34	0.48	0.19	0.09	0.90	1.06	99.76	15.66	3.41	8.69	1.40	7.16	2.31	0.91	2.93	0.59

Measured value 3	51.41	11.83	5.12	9.50	7.68	9.27	2.34	0.48	0.19	0.09	0.90	0.99	99.81	15.68	3.34	8.71	1.40	7.04	2.28	0.91	2.90	0.59
Measured value 4	51.59	11.81	3.59	10.80	7.63	9.28	2.33	0.48	0.19	0.09	0.90	1.12	99.81	15.59	3.37	8.71	1.40	7.21	2.33	0.94	2.93	0.61

Certified standards material	**Dy**	**Ho**	**Er**	**Tm**	**Yb**	**Lu**	**Rb**	**Ba**	**Th**	**U**	**Nb**	**Ta**	**Pb**	**Sr**	**Zr**	**Hf**	**Y**	**V**	**Cr**	**Co**	**Ni**
GAu9bGSR1																					
Certified value	10.20	2.05	6.50	1.06	7.40	1.15	466.00	343.00	54.00	18.80	40.00	7.20	31.00	106.00	167.00	6.30	62.00	24.00	3.60	3.40	2.30
Measured value 1	9.54	1.89	5.84	1.00	7.04	1.22	489.80	317.90	47.26	18.11	45.11	7.07	30.91	113.10	169.50	5.93	67.17	23.60	5.00	3.03	1.96
Measured value 2	10.60	2.13	6.54	1.12	7.94	1.35	487.60	324.30	53.88	21.61	45.00	7.87	35.23	112.20	164.40	6.25	69.82	24.20	3.00	3.06	1.92
Measured value 3	10.55	2.09	6.45	1.10	7.95	1.37	490.50	322.10	53.94	21.51	45.86	7.92	34.61	113.00	165.30	6.34	69.49	22.00	3.00	3.03	1.96
Measured value 4	10.39	2.03	6.42	1.09	7.91	1.34	492.30	325.70	55.38	21.68	46.42	7.89	34.88	114.00	164.80	6.28	68.52	24.40	3.00	3.12	2.00
GAu10bGSR2																					
Certified value	1.85	0.34	0.85	0.15	0.89	0.12	38.00	1020.00	2.60	0.90	6.80	0.40	11.30	790.00	99.00	2.90	9.30	94.00	32.00	13.20	17.00
Measured value 1	1.79	0.32	0.83	0.13	0.78	0.13	40.10	1007.90	2.33	0.89	5.88	0.36	9.91	803.10	107.30	2.69	9.29	88.30	35.70	13.01	16.84
Measured value 2	1.75	0.32	0.80	0.12	0.76	0.13	40.50	1037.70	2.49	0.94	5.94	0.39	10.81	800.00	106.40	2.88	8.83	90.40	34.70	13.33	17.04
Measured value 3	1.82	0.32	0.87	0.12	0.75	0.13	40.80	1027.70	2.44	0.95	5.84	0.39	10.61	802.50	105.00	2.81	9.21	92.70	31.90	13.31	16.66
Measured value 4	1.76	0.30	0.80	0.12	0.76	0.12	41.30	1026.80	2.58	0.95	6.19	0.40	11.06	799.10	105.10	2.84	8.68	92.00	31.90	14.04	17.75
GAu11bGSR14																					
Certified value	1.52	0.27	0.76	0.11	0.69	0.11	57.00	1140.00	1.90	0.40	4.50	0.34	7.60	690.00	100.00	3.30	7.30	45.00	24.00	7.80	13.00
Measured value 1	1.69	0.29	0.79	0.11	0.74	0.11	60.40	1199.70	1.69	0.37	4.57	0.32	7.98	727.10	104.60	3.20	8.60	39.10	28.10	7.85	13.19
Measured value 2	1.66	0.29	0.79	0.11	0.73	0.11	60.50	1182.90	1.73	0.38	4.61	0.34	7.77	730.60	103.80	3.15	8.40	39.90	28.90	7.77	12.98
Measured value 3	1.65	0.29	0.81	0.11	0.72	0.12	61.10	1202.20	1.49	0.35	4.60	0.33	6.69	734.90	101.90	2.90	8.54	47.50	29.90	7.51	13.05
Measured value 4	1.63	0.28	0.81	0.12	0.70	0.12	61.20	1186.50	1.53	0.35	4.49	0.33	6.38	737.70	106.00	3.07	8.46	46.10	30.20	7.36	12.82
GAu12aGSR15																					
Certified value	3.50	0.85	2.30	0.37	2.40	0.39	29.00	62.00	0.40	0.14	2.70	0.18	8.00	142.00	57.00	1.50	20.00	296.00	137.00	52.00	117.00
Measured value 1	3.94	0.83	2.41	0.38	2.54	0.43	26.30	62.40	0.46	0.17	2.61	0.19	7.19	133.30	51.50	1.59	23.14	326.40	126.00	58.63	118.90
Measured value 2	4.12	0.83	2.53	0.39	2.68	0.46	25.70	57.40	0.44	0.15	2.46	0.18	7.32	132.50	51.80	1.64	23.83	329.80	123.70	55.03	111.80

Measured value 3	4.07	0.84	2.53	0.40	2.66	0.44	25.90	56.00	0.39	0.16	2.92	0.18	7.29	133.80	51.40	1.68	23.84	322.30	118.70	60.21	121.00
Measured value 4	4.13	0.84	2.52	0.41	2.71	0.48	25.80	63.60	0.47	0.16	2.52	0.18	7.15	132.50	50.60	1.62	24.17	330.10	123.60	57.27	114.40

Duplicates materials	**SiO_2 (wt.%)**	**Al_2O_3**	**Fe_2O_3**	**FeO**	**MgO**	**CaO**	**Na_2O**	**K_2O**	**MnO**	**P_2O_5**	**TiO_2**	**LOI**	**Total**	**TFe_2O_3**	**La (ppm)**	**Ce**	**Pr**	**Nd**	**Sm**	**Eu**	**Gd**	**Tb**
476002																						
Measured value 1	71.35	16.06	0.38	0.53	0.37	1.60	4.20	4.81	0.02	0.06	0.15	0.32	99.83	0.97	25.67	46.57	5.03	17.13	2.83	0.82	2.28	0.32
Measured value 2	71.06	16.16	0.41	0.53	0.47	1.63	4.17	4.85	0.03	0.05	0.16	0.25	99.76	1.00	24.60	48.99	5.47	18.95	3.12	0.85	2.48	0.35
476003																						
Measured value 1	46.29	10.96	1.99	4.98	10.91	7.72	1.17	2.61	0.08	0.23	0.73	12.13	99.80	7.52	43.39	90.84	10.57	39.58	6.25	1.64	4.78	0.61
Measured value 2	46.11	10.90	2.01	4.95	11.20	7.75	1.10	2.60	0.08	0.24	0.74	12.10	99.78	7.51	43.41	92.32	10.83	40.60	6.45	1.73	4.76	0.64
476004																						
Measured value 1	51.08	12.15	2.54	4.08	9.43	7.37	2.37	1.68	0.08	0.25	0.72	8.09	99.82	7.07	36.20	73.22	8.39	30.61	4.96	1.44	4.02	0.55
Measured value 2	51.03	12.12	2.46	4.12	9.50	7.34	2.35	1.67	0.08	0.25	0.72	8.17	99.80	7.03	37.21	75.53	8.77	32.03	5.11	1.50	4.14	0.57
476005																						
Measured value 1	49.18	11.67	1.34	5.48	10.57	8.77	1.15	2.00	0.16	0.32	0.79	8.40	99.84	7.43	50.16	104.53	11.90	44.32	6.83	1.91	5.30	0.67
Measured value 2	49.23	11.68	1.29	5.53	10.65	8.78	1.09	2.00	0.17	0.33	0.79	8.31	99.84	7.43	55.11	114.82	13.12	48.48	7.54	2.09	5.76	0.74
476006																						
Measured value 1	48.57	12.48	2.42	4.79	10.59	7.67	2.57	1.96	0.11	0.49	0.84	7.34	99.83	7.74	44.26	100.74	11.80	45.17	7.19	2.01	5.66	0.73
Measured value 2	48.54	12.44	2.09	5.07	10.81	7.64	2.56	1.95	0.11	0.49	0.83	7.31	99.85	7.73	43.24	109.95	12.75	49.40	7.89	2.21	5.99	0.78
476007																						
Measured value 1	49.68	12.81	2.22	5.06	9.14	8.19	2.04	2.58	0.12	0.94	0.90	6.09	99.78	7.85	56.61	131.64	16.01	63.27	11.33	3.19	9.01	1.17
Measured value 2	49.71	12.96	2.37	4.99	8.89	8.24	2.08	2.58	0.12	0.95	0.90	6.01	99.78	7.91	66.90	154.17	18.94	74.35	13.19	3.74	10.71	1.36
476008																						
Measured value 1	54.08	11.47	2.72	5.55	10.65	7.31	1.76	2.89	0.23	0.45	0.72	1.94	99.78	8.89	110.01	234.55	25.35	91.94	12.74	3.13	8.81	0.97

Measured value 2	54.29	11.37	2.79	5.54	10.47	7.33	1.78	2.91	0.24	0.45	0.73	1.91	99.80	8.95	120.16	251.43	27.33	98.72	13.72	3.45	9.45	1.05
476009																						
Measured value 1	47.76	11.13	1.58	6.48	13.91	7.67	2.03	4.18	0.11	0.95	1.00	2.97	99.78	8.79	44.38	127.28	15.66	63.84	11.71	3.32	9.31	1.20
Measured value 2	47.58	11.25	1.64	6.49	13.95	7.66	2.03	4.21	0.12	0.94	1.02	2.95	99.82	8.86	46.41	130.69	16.40	67.81	12.48	3.50	9.64	1.26
476010																						
Measured value 1	66.69	16.18	1.23	1.94	1.67	2.75	3.92	3.98	0.06	0.19	0.33	0.86	99.77	3.38	63.85	127.31	13.21	43.84	5.71	1.43	4.21	0.50
Measured value 2	66.63	16.29	1.26	1.96	1.76	2.78	3.88	4.05	0.06	0.19	0.33	0.59	99.78	3.44	65.90	130.64	13.71	45.11	5.78	1.48	4.23	0.48
476011																						
Measured value 1	53.41	13.20	1.62	7.58	8.93	9.37	2.62	1.05	0.15	0.04	0.30	1.53	99.80	10.04	5.62	11.54	1.36	5.20	1.15	0.38	1.34	0.26
Measured value 2	53.77	13.00	1.48	7.74	8.80	9.30	2.59	1.03	0.15	0.04	0.31	1.61	99.83	10.08	5.93	12.16	1.45	5.52	1.21	0.40	1.44	0.28
476012																						
Measured value 1	52.65	12.46	1.82	4.17	9.50	6.74	2.48	1.75	0.08	0.21	0.64	7.26	99.77	6.45	30.78	63.52	7.24	26.95	4.32	1.23	3.63	0.49
Measured value 2	52.43	12.38	1.68	4.31	9.50	6.79	2.43	1.75	0.09	0.21	0.64	7.56	99.77	6.47	32.14	67.45	7.79	29.40	4.72	1.34	3.79	0.52
476013																						
Measured value 1	49.75	16.07	3.75	4.38	6.52	7.22	3.30	2.55	0.13	0.63	1.07	4.47	99.85	8.61	58.34	129.99	15.62	59.56	9.31	2.69	7.29	0.93
Measured value 2	49.89	16.03	3.69	4.40	6.52	7.27	3.28	2.53	0.14	0.64	1.07	4.33	99.79	8.58	55.31	126.92	15.35	58.34	9.23	2.66	7.05	0.92
476014																						
Measured value 1	57.15	16.07	1.28	3.30	5.55	6.47	4.04	2.87	0.09	0.57	0.83	1.54	99.76	4.95	44.40	91.76	10.72	39.77	5.82	1.91	4.59	0.56
Measured value 2	57.31	16.13	1.28	3.35	5.49	6.57	3.99	2.88	0.09	0.58	0.85	1.32	99.83	5.00	45.89	96.55	11.41	42.24	6.41	2.06	4.89	0.59
476016																						
Measured value 1	50.60	13.32	2.61	3.99	9.04	8.28	2.28	2.04	0.10	0.56	0.85	6.09	99.76	7.05	49.05	105.16	12.35	46.41	7.44	2.18	5.89	0.76
Measured value 2	50.73	13.34	2.69	3.97	8.83	8.37	2.30	2.07	0.11	0.57	0.86	5.93	99.76	7.10	49.52	108.76	12.75	48.29	7.83	2.30	5.90	0.78
476017																						
Measured value 1	47.74	12.01	2.44	4.90	11.47	8.31	1.96	1.57	0.11	0.46	0.73	8.05	99.75	7.88	45.73	94.91	10.99	41.45	6.74	1.94	5.37	0.72
Measured value 2	47.85	12.01	2.59	4.87	11.32	8.38	1.99	1.61	0.12	0.47	0.74	7.86	99.80	8.00	45.89	97.11	11.30	42.81	6.91	1.99	5.62	0.74
476018																						

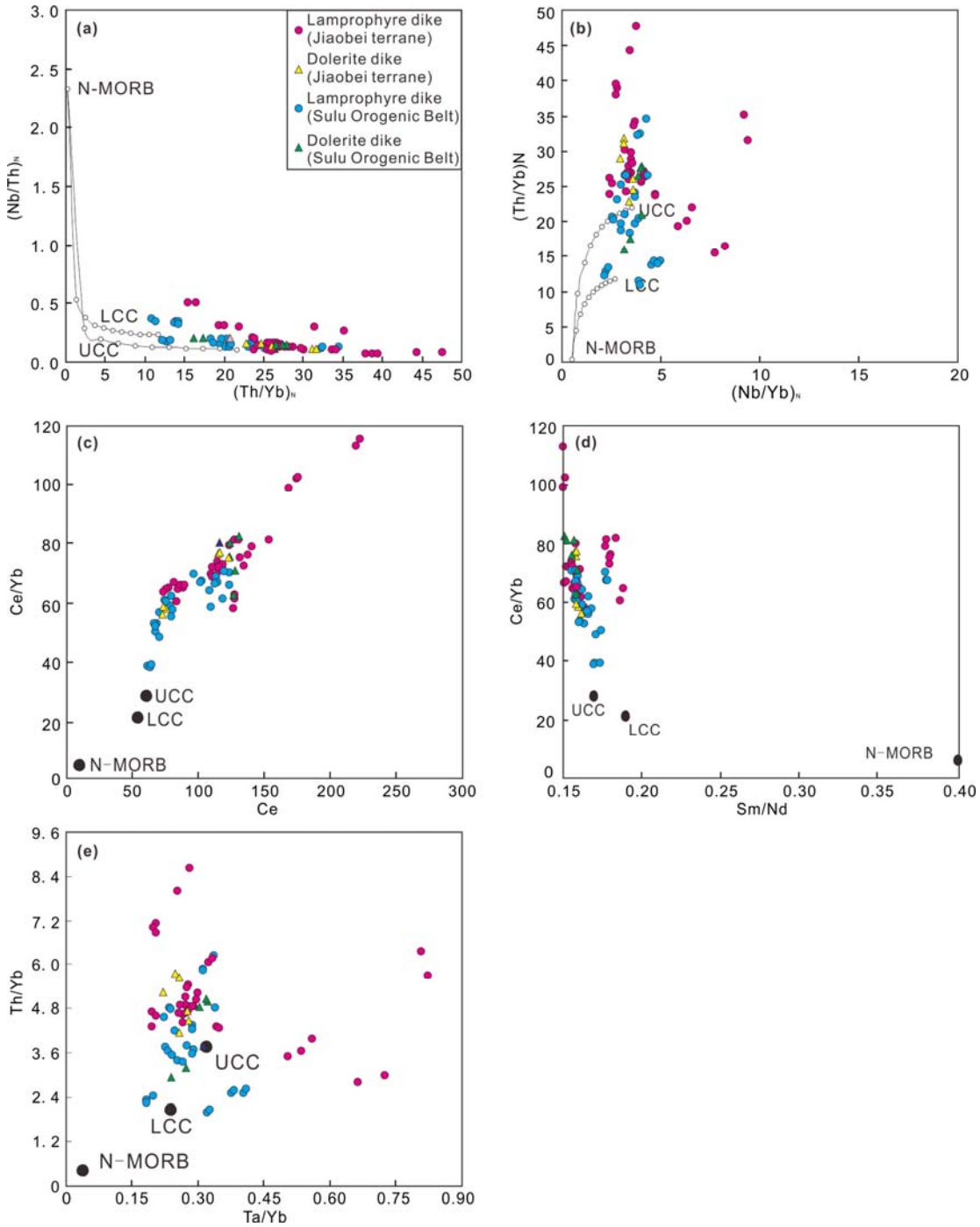
Measured value 1	53.36	13.69	2.23	4.35	9.67	4.74	2.93	2.57	0.09	0.47	0.75	4.97	99.82	7.06	58.55	123.59	13.87	51.01	7.65	2.08	5.89	0.74
Measured value 2	53.54	13.67	2.09	4.46	9.43	4.68	3.04	2.57	0.08	0.47	0.75	4.97	99.76	7.05	56.72	124.30	14.16	52.31	8.12	2.15	5.98	0.75
Duplicates																						
materials	**Dy**	**Ho**	**Er**	**Tm**	**Yb**	**Lu**	**Rb**	**Ba**	**Th**	**U**	**Nb**	**Ta**	**Pb**	**Sr**	**Zr**	**Hf**	**Y**	**V**	**Cr**	**Co**	**Ni**	
476002																						
Measured value 1	1.67	0.31	0.93	0.14	0.94	0.15	117.70	1938.40	8.25	1.78	9.83	0.97	29.47	1084.90	126.40	3.47	11.49	13.80	7.90	1.22	3.34	
Measured value 2	1.87	0.35	1.02	0.16	1.04	0.17	115.20	1958.70	9.06	2.16	9.95	1.05	31.67	1058.20	126.60	3.72	12.35	12.80	11.60	1.20	3.47	
476003																						
Measured value 1	2.87	0.53	1.38	0.20	1.30	0.21	91.90	1533.70	4.84	0.86	5.16	0.25	13.64	873.20	129.90	3.00	15.24	174.80	582.30	35.01	172.20	
Measured value 2	3.03	0.53	1.48	0.21	1.36	0.21	91.30	1492.50	5.90	1.10	5.41	0.30	16.60	862.20	131.60	3.27	14.97	169.00	582.10	40.14	194.70	
476004																						
Measured value 1	2.73	0.48	1.32	0.18	1.21	0.21	29.50	1263.70	4.68	1.07	6.22	0.30	14.57	706.00	135.80	2.90	14.25	160.30	519.00	31.42	142.30	
Measured value 2	2.88	0.51	1.40	0.19	1.30	0.21	28.90	1301.70	5.36	1.29	6.66	0.34	17.33	681.20	131.90	3.27	14.34	159.10	532.70	34.10	153.80	
476005																						
Measured value 1	3.11	0.54	1.55	0.21	1.40	0.23	76.90	1304.30	6.40	1.25	5.75	0.28	79.93	796.10	148.50	3.30	16.19	171.80	456.10	33.09	155.10	
Measured value 2	3.44	0.60	1.71	0.24	1.56	0.26	79.00	1291.80	7.15	1.42	6.02	0.32	88.01	812.60	152.20	3.56	16.92	172.30	457.20	34.26	157.00	
476006																						
Measured value 1	3.46	0.61	1.65	0.24	1.46	0.24	51.70	2025.10	5.35	1.02	7.74	0.38	6.18	812.00	153.90	3.56	18.00	178.60	446.70	35.23	153.10	
Measured value 2	3.84	0.67	1.84	0.26	1.64	0.27	53.60	2018.20	6.46	1.24	8.29	0.45	7.76	839.60	160.80	3.62	18.84	183.30	442.50	38.86	170.70	
476007																						
Measured value 1	5.23	0.83	2.08	0.27	1.73	0.27	66.70	2760.20	8.31	1.34	11.28	0.48	8.02	1177.40	288.60	6.11	24.91	176.70	354.10	33.59	105.80	
Measured value 2	6.00	0.96	2.48	0.31	1.90	0.31	68.30	2780.70	9.30	1.49	11.82	0.52	8.79	1206.10	294.40	6.55	27.43	177.90	382.20	35.20	112.30	
476008																						
Measured value 1	4.00	0.66	1.85	0.25	1.59	0.26	118.40	4742.10	20.38	3.41	5.81	0.28	15.70	9805.20	257.30	6.24	19.80	170.70	518.90	30.95	113.50	
Measured value 2	4.33	0.73	2.04	0.26	1.73	0.29	117.90	4803.10	22.73	3.82	6.07	0.31	17.51	9752.30	247.30	6.33	20.57	168.80	503.40	32.80	117.30	
476009																						

Measured value 1	5.29	0.82	2.07	0.25	1.47	0.23	100.60	3276.20	6.97	1.55	11.57	0.54	5.86	886.10	263.70	5.78	24.27	183.30	684.00	46.27	346.90
Measured value 2	5.57	0.85	2.13	0.27	1.61	0.24	105.80	3271.20	6.86	1.61	11.42	0.56	5.44	913.40	272.50	6.61	24.37	187.80	678.20	44.96	335.50
476010																					
Measured value 1	2.10	0.38	1.12	0.16	1.02	0.18	74.10	2769.80	15.58	2.44	7.05	0.47	22.62	822.30	147.40	4.29	12.04	44.30	24.20	8.55	9.03
Measured value 2	2.19	0.39	1.16	0.16	1.10	0.18	81.60	2815.60	17.14	2.76	7.22	0.51	24.18	917.80	162.60	4.87	11.85	48.30	26.30	9.07	9.10
476011																					
Measured value 1	1.75	0.38	1.13	0.18	1.19	0.22	55.00	88.70	1.64	0.35	2.32	0.24	2.71	109.30	21.90	0.86	11.01	190.60	98.90	49.48	101.70
Measured value 2	1.83	0.39	1.19	0.19	1.31	0.23	51.90	88.60	1.56	0.37	2.27	0.24	2.22	103.90	21.00	0.87	11.33	189.30	95.00	48.84	98.82
476012																					
Measured value 1	2.45	0.45	1.27	0.19	1.20	0.20	47.10	1510.50	4.61	1.18	5.16	0.29	19.19	654.00	127.30	3.03	13.35	148.90	402.90	30.34	119.20
Measured value 2	2.70	0.48	1.35	0.19	1.27	0.21	50.90	1503.50	4.62	1.16	4.93	0.29	16.42	708.10	135.30	3.33	13.50	148.80	421.10	28.88	114.00
476013																					
Measured value 1	4.63	0.82	2.30	0.32	2.12	0.34	45.80	2607.00	5.57	1.11	9.29	0.47	13.98	1296.80	194.90	4.15	24.11	164.30	18.30	27.29	11.90
Measured value 2	4.51	0.79	2.24	0.32	2.03	0.34	49.40	2590.80	5.88	1.19	9.57	0.48	14.22	1414.60	207.40	4.51	22.83	165.80	16.00	28.21	12.00
476014																					
Measured value 1	2.53	0.41	1.07	0.13	0.76	0.10	85.30	1866.90	4.13	0.67	10.18	0.50	11.99	1079.40	184.70	4.91	11.90	114.30	148.90	14.19	82.78
Measured value 2	2.66	0.43	1.14	0.13	0.83	0.12	89.70	1846.70	5.00	0.79	11.14	0.56	13.67	1154.10	192.30	5.31	12.21	112.70	154.10	15.65	93.32
476016																					
Measured value 1	3.63	0.65	1.82	0.25	1.70	0.27	50.70	1733.40	5.17	1.21	9.10	0.44	32.90	1184.60	180.60	4.01	19.19	151.80	311.00	30.34	132.20
Measured value 2	3.79	0.66	1.85	0.26	1.70	0.28	55.00	1785.80	6.02	1.37	9.44	0.49	36.32	1298.80	191.50	4.49	18.86	152.00	314.80	33.13	140.70
476017																					
Measured value 1	3.51	0.62	1.73	0.23	1.53	0.26	45.90	1369.10	4.98	1.28	7.88	0.39	13.27	800.00	147.50	3.50	18.03	149.50	465.20	36.11	190.00
Measured value 2	3.62	0.64	1.77	0.25	1.59	0.27	50.80	1395.50	5.35	1.38	8.14	0.42	13.45	891.50	160.60	4.01	17.92	153.10	462.90	37.06	194.90
476018																					
Measured value 1	3.48	0.61	1.71	0.24	1.53	0.26	61.90	2151.60	7.19	1.46	9.46	0.49	11.78	1303.10	206.20	4.99	18.05	155.90	300.40	28.79	114.00
Measured value 2	3.59	0.64	1.77	0.25	1.65	0.28	55.20	2113.40	7.89	1.59	9.51	0.50	11.70	1177.40	181.60	4.22	18.11	153.50	300.70	28.64	111.80

Table DR2. Analytical results of the certified reference material for the PGE analysis

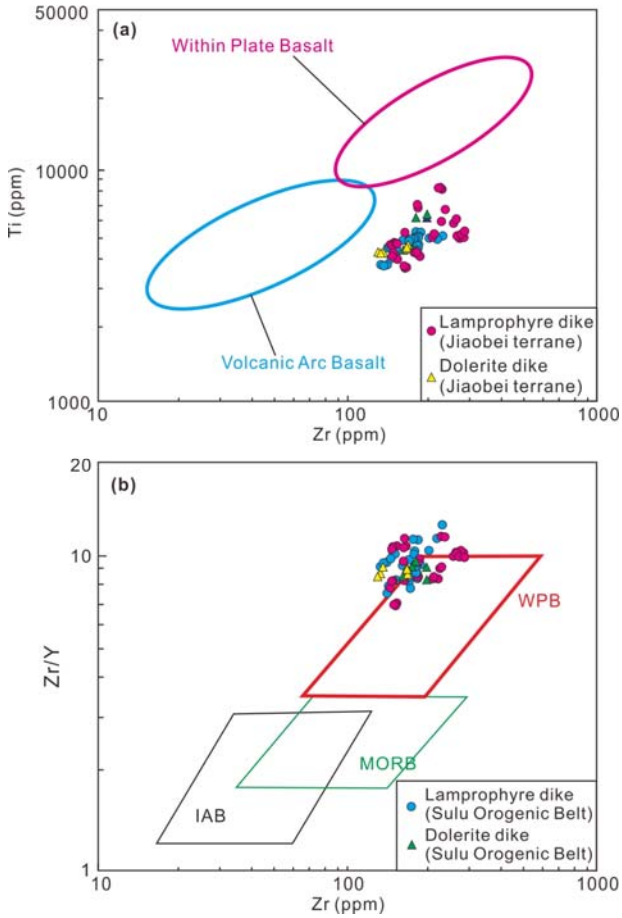
Certified reference material	Ir (ppb)	Pd	Pt	Rh	Ru	Os
Gpt-1						
Certified value	0.032	0.26	0.26	-0.02	-0.05	0.05
Measured value	0.0376	0.245	0.25	0.013	0.065	0.06
Gpt-2						
Certified value	0.05	2.3	1.6	-0.1	0.095	0.06
Measured value	0.059	2.01	1.64	0.09	0.17	0.06
Gpt-3						
Certified value	4.3	4.6	6.4	1.3	14.8	9.6
Measured value	4.63	4.11	6.45	1.2	12.9	8.64
Gpt-4						
Certified value	4.7	60	58	4.3	2.5	2.4
Measured value	5.32	61.88	51.03	3.88	2.89	2.24

Figure DR1



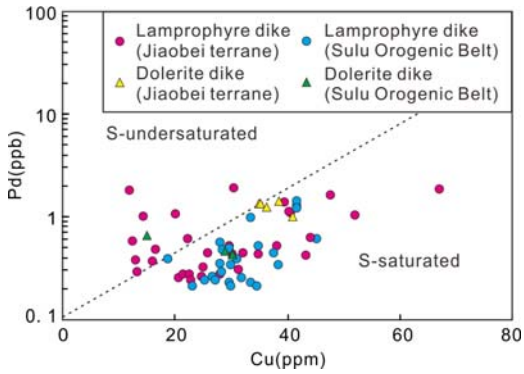
(a) Diagram showing variations in the $(Nb/Th)_{PM}$ and $(Th/Yb)_{PM}$ ratios; **(b)** Diagram showing variations in the $(Th/Yb)_{PM}$ and $(Nb/Yb)_{PM}$ ratios, which are normalized to the Primitive Mantle values of McDonough and Sun (1995). **(c)** Plots of Ce/Yb vs. Ce; **(d)** Plot of Ce/Yb vs. Sm/Nd; **(e)** Plots of Th/Yb vs. Ta/Yb. Data source: N-MORB composition is from Hoffman (1988). The Upper Continental Crust (UCC) and Lower Continental Crust (UCC) compositions are from Gao et al. (1998).

Figure DR2



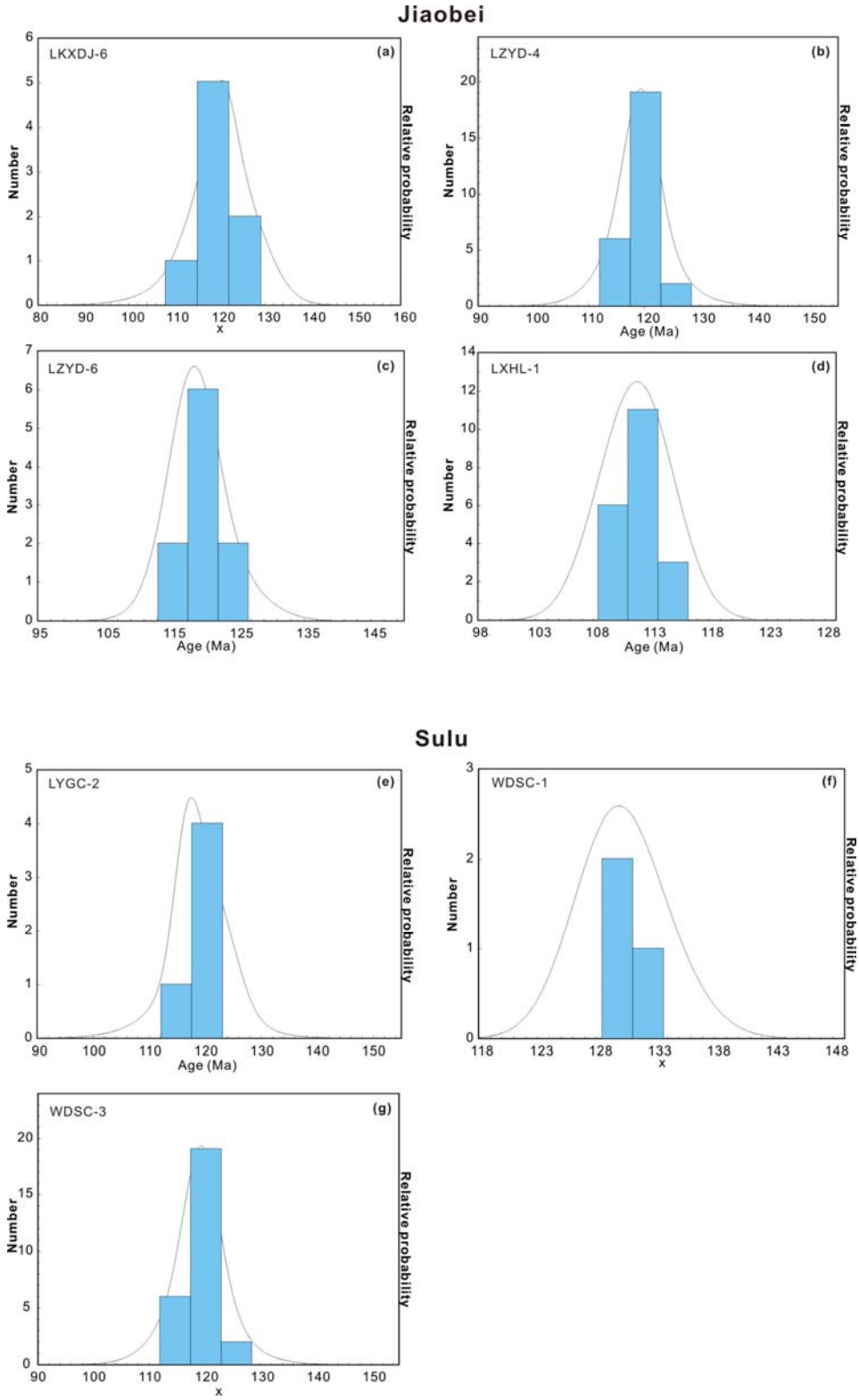
(a) Plots of Ti vs. Zr (Pearce, 1996), **(b)** Plots of Zr vs. Zr/Y (Pearce and Norry, 1979)

Figure DR3



Plots of Pb vs. Cu (after Vogel and Keays, 1997)

Figure DR4



The probability density plot of zircon U-Pb age.

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